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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,955	10/30/2003	Ikuya Kikuchi	041465-5211	6270

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WASHINGTON, DC 20005-1209

EXAMINER

ALUNKAL, THOMAS D

ART UNIT	PAPER NUMBER
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2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/695,955

Applicant(s)

KIKUCHI ET AL.

Examiner

Thomas D. Alunkal

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2,4-5,8-9,11-12 rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi (**U.S. 6,108,139**).

Regarding **Claims 1-2,4-5**, Takahashi teaches a spherical aberration correcting unit for correcting an aberration caused in an optical beam radiated toward an object to be detected and focused on the object, the unit comprising (**Column 2, lines 20-24 and lines 46-50**):

- an aberration corrector composed of a plurality of optical members and configured to form an optical beam into a parallel pencil and to correct aberration caused in the optical beam (**see Column 2, lines 24-33, Column 2, lines 46-50**), the optical members including at least a converging lens (Column 6, lines 5-7 and Figure 4, Element 37a) and a diverging lens respectively (Figure 4, Element 37b)
- a driver configured to drive only one of the converging lens and the diverging lens in an optical axis direction of the optical beam (**Column 6,**

- lines 16-20.** Specifically, both collimator lens units 37a and 37b are movable. Thus, either one can be moved to compensate for aberration)
- a light receiver configured to receive light reflected from the object to produce a light-reception signal from the received light (**see Figures 1 and 3, Element 17**)
 - a controller configured to control the driver based on the produced light-reception signal (**see Column 3, lines 40-45**).
 - wherein the object is an optical information recording medium (**see Figure 1, Element 3**)
 - wherein the aberration corrector is a collimator lens (**see Column 5, lines 10-13**)
 - wherein the any one of the optical members is composed of a plurality of lenses (**see Figure 4, Element 37a**)

Regarding **Claims 8-9,11**, Takahashi teaches:

An optical pickup for reading and writing information from and to an optical information medium by radiating an optical beam toward the optical information medium, the optical beam being focused on the optical information medium, the optical pickup comprising (**Column 2, lines 20-24 and lines 46-50**):

- an spherical aberration correcting unit for correcting an aberration caused in the optical beam, where in the unit comprises: an aberration corrector composed of a plurality of optical members and configured to form the optical beam into a parallel pencil and to correct the aberration

caused in the optical beam (see **Column 2, lines 24-33, Column 2, lines 46-50**) the optical members including at least a converging lens (Column 6, lines 5-7 and Figure 4, Element 37a) and a diverging lens respectively (Figure 4, Element 37b)

- a driver configured to drive only one of the converging lens and the diverging lens in an optical axis direction of the optical beam (**Column 6, lines 16-20**. Specifically, both collimator lens units 37a and 37b are movable. Thus, either one can be moved to compensate for aberration)
- a light receiver configured to receive light reflected from the medium to produce light reflected from the medium to produce a light-reception signal from the received light (see **Figures 1 and 3, Element 17**)
- a controller configured to control the driver based on the produced light-reception signal (see **Column 3, lines 40-45**)
- wherein the object is an optical information recording medium (see **Figure 1, Element 3**)
- wherein the aberration corrector is a collimator lens (see **Column 5, lines 10-13**)

Regarding **Claim 12**, it is a method of **Claims 1 and 8**, which were previously rejected. See Takahashi's teachings above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi (**U.S. 6,108,139**) as applied to **Claims 1-2,4-5,8-9,11-12** above, and further in view of Nakagawa (**U.S. 3,887,269**).

See teachings of Takashi above.

Takashi does not teach:

- wherein a relationship of $0.2 < |f_1/f| < 0.82$ is established, wherein a composite focal length of the converging lens and the diverging lens of the aberration corrector is f and a focal length of the driven one of thus driven one of the converging lens and the diverging lens is f_1

However, Nakagawa teaches:

- wherein a relationship of $0.2 < |f_1/f| < 0.82$ is fulfilled, wherein a composite focal length of the aberration corrector is f and a focal length of the driven optical member is f_1 (see **Column 1, lines 35-40, 48-68, Column 2, lines 1-18**). One of ordinary skill in the art at the time the invention was made could easily discern that dividing Condition 1 (**Column1, line 36**) by f (composite focal length), the resulting relationship lies within the range specified by **Claims 3 and 10** (see MPEP, 2131.03)

It would have been obvious to one of ordinary skill in the art at the time the invention was to incorporate Nakagawa's teachings into the range of Takahashi's

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teachings. Both Takahashi and Nakagawa teach lens system focal length limitations that are used to correct spherical aberration. As stated by Nakagawa (**Column 1, 48-68, Column 2, lines 1-18**), this limitation is essential to remarkably improve spherical aberration. Since Takahashi and Nakagawa both disclose inventions that teach methods for correcting spherical aberration, one of ordinary skill in the art at the time the invention was made would have found it prima facie obvious to combine both teachings because the focal length relationship taught by Nakagawa is used in a lens system, which achieves the same function as the invention taught by Takahashi.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (**U.S. 6,108,139**) as applied to **Claims 1-2,4-5,8-9,11-12** above, and further in view of Arai et al (hereafter Arai)(**US 5,818,809**).

See teachings of Takahashi above.

Takashi does not teach:

- wherein at least one of the converging lens and the diverging lens has an aspheric surface

However, Arai teaches:

- wherein at least one of the converging lens and the diverging lens has an aspheric surface (**Figure 4, Element 44 and Column 4, lines 6-15**)

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to provide the optical head device of Takahashi with the aspheric lens surface of Duncan, motivation being to correct wavefront

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aberrations while reducing the total number of lenses provided in the collimating lens system.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (**U.S. 6,108,139**) as applied to **Claims 1-2,4-5,8-9,11-12** above, and further in view of Ward et al. (**Published April 1971, "Lens Aberration Correction by Holography"**).

See teachings of Takashi above.

Takashi does not teach:

- wherein a hologram is attached to the at least one of the converging lens and the diverging lens

However, Ward et al teaches:

- wherein a hologram is attached to the at least one of the converging lens and the diverging lens (**see Page 1, Introduction**)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Ward et al.'s teachings into the range of Takahashi's teachings. Both disclose methods for correcting lens aberration. As exemplified by Ward et al., the use holograms to correct aberrations (filtering out phase) has been well known in the art since the early 1970's. Furthermore, one would have been motivated to combine the two teachings because the use of a hologram as an aberration corrector is both cheaper and more practical (**see Introduction**). Thus, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, with a

reasonable expectation of success to combine the above teachings of Takahashi and Ward et al., as it pertains to the disclosed invention because Ward et al. teaches exactly wherein a hologram corrects the aberration of a lens with a collimated reference. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, absent unexpected results to the contrary.

Response to Arguments

Page 9, paragraph 3, of applicant's remarks/arguments: Applicants argue that Takahashi does not disclose the discussed features. In the previous Office action, Nakagawa, not Takashi, was relied upon to disclose the features.

Page 9, paragraphs 4 and 5, of applicant's remarks/arguments: Applicants argue that Takahashi discloses an invention that has complicated structure and that is not compact because lenses on both sides are driven. However, in Column 6, lines 16-20, Takahashi discloses otherwise. Specifically, both collimator lens units 37a and 37b are movable. Thus, either one can be moved to compensate for aberration.

Applicant's arguments files 10/30/03 have been fully considered but they are not persuasive for the reasons provided above.

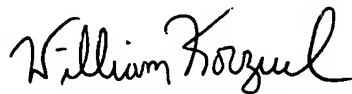
Conclusions

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Alunkal whose telephone number is (571)270-1127. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571)272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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